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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/877,371 | 06/08/2001 | Benjamin Edward Russ | 68581 | 2434 |

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FITCH EVEN TABIN AND FLANNERY
120 SOUTH LA SALLE STREET
SUITE 1600
CHICAGO, IL 60603-3406

EXAMINER

HARPER, HOLLY R

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 02/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/877,371

Applicant(s)

RUSS ET AL.

Examiner

Holly R. Harper

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 6, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuo (USPN 5,340,997).

In regard to claim 1, the Kuo reference discloses a field emission device with a substrate (Figure 1A, Element 102) and an isolation barrier (trench) formed within the top surface of the substrate, which contains an emitter line (Figure 1A, Element 108). The substrate is made of insulating material (Column 5, Line 68- Column 6, Line 2), which provides field isolation between the emitter lines.

In regard to claim 2, the Kuo reference discloses that an electron emitter line is formed within the isolation barrier (Figure 1A, Element 108).

In regard to claim 6, the Kuo reference discloses that the in-laid linear isolation barrier is a trench (Figure 1A, Element 108).

In regard to claim 8, the Kuo reference discloses that the isolation barrier extends the length of the substrate (Figure 1A).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 3, 7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being anticipated by Novich (USPN 5,811,926) in view of Kim et al. (USPN 6,146,230).

In regard to claim 1 and 9, the Novich reference discloses a field emission device with a cathode substrate (Figure 2, Element 530) and an isolation barrier formed within the top surface of the substrate, which contains an emitter tip (Figure 2, Element 556 and 570). The insulating substrate can be formed of glass or a polymeric material (Column 4, Lines 56-58) and provides field isolation between the emitter lines.

The Novich reference does not disclose the use of an emitter line. The Kim reference teaches that a flat emitter line can be used in a field emission device (Figure 1). Flat emitter lines are cheaper than cone emitters and easier to make uniform on a large scale substrate plate (Column 2, Lines 15-19).

Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate flat emitter lines, as taught by Kim, instead of emitter tips.

In regard to claim 2, the Novich reference discloses that an electron emitter line is formed within the isolation barrier (Figure 2, Element 556).

In regard to claim 3, 7, and 10, the Novich reference discloses spacers (gate wires) made of aluminum fibers (Column 9, Lines 48-51) in a frame (Figure 11) positioned over the substrate (Figure 2, Element 616).

Regarding claims 3 and 7, the recitation “dampen vibrations in the gate wires due to the driving frequency” has not been given patentable weight because is considered an intended used recitation. It has been held that a recitation with respect to the manner in which a claimed

apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo in view of Chason (USPN 5,019,003).

In regard to claim 1, the Kuo reference discloses a field emission device with a substrate (Figure 1A, Element 102) and an isolation barrier (trench) formed within the top surface of the substrate, which contains an emitter line (Figure 1A, Element 108). The substrate is made of insulating material (Column 5, Line 68- Column 6, Line 2), which provides field isolation between the emitter lines.

In regard to claims 4 and 5, the Kuo reference does not disclose that a trace is used to connect the top surface of the substrate to the emitter line. The Chason reference teaches that a field emission device can have a trace between the substrate and the emitter. This will help control the surface potential. The trace would need to be bent to reach between the substrate and into the trench where the emitter is located.

Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate a trace between the substrate and the emitter, as taught by Chason.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kim et al. (USPN 6,146,230) also discloses the use of isolation barriers to separate emitter lines.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Harper whose telephone number is (703) 305-7908. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Holly Harper
Patent Examiner
Art Unit 2879



NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800